



## SEQUENCE LISTING

<110> VisiGen Biotechnologies

<120> REAL-TIME SEQUENCE DETERMINATION

<130> 00007/01UTL

<140> 09/901,782

<141> 2001-07-09

<150> 60/ 216,594

<151> 2000-07-07

<160> 48

<170> PatentIn version 3.1

<210> 1

<211> 38

<212> DNA

<213> Synthetic DNA Sequence

<220>

<221> promoter

<222> (1)..(38)

<223> Synthetic DNA forward promoter for amplifying full-length Ta  
q Pol  
I coding sequence. 5' to 3' listing

<400> 1  
gcgaattcat gaggggggatg ctgcccctct ttgagccc  
38

<210> 2

<211> 37

<212> DNA

<213> Synthetic DNA Sequence

<220>

<221> promoter

<222> (1)..(37)

<223> Synthetic DNA Reverse promoter for amplifying full-length  
Taq P  
ol I coding sequence. 5' to 3' listing.

<400> 2  
gcgaattcac cctccttggc ggagcgccag tcctccc  
37

<210> 3  
<211> 37  
<212> DNA  
<213> Synthetic DNA Sequence

<220>  
<221> promoter  
<222> (1)..(37)  
<223> Synthetic DNA promoter for truncated Taq Pol I coding sequence.  
5' to 3' listing.

<400> 3  
aatccatggg ccctggagga ggccccctgg cccccgc  
37

<210> 4  
<211> 32  
<212> DNA  
<213> Thermus aquaticus

<220>  
<221> mutation  
<222> (14)..(16)  
<223> Site 643 of Taq Pol I: Alanine codon, gcc, to cyseine codon, tgc:  
5' to 3' listing

<400> 4  
ccacacggag acctgcagct ggatgttcgg cg  
32

<210> 5  
<211> 32  
<212> DNA  
<213> Thermus aquaticus

<220>

<221> Mutation  
 <222> (17)..(19)  
 <223> Site 643 of complement strand of Taq Pol I: alanine antisense  
 e cod  
 on, ggc, to cysteine antisense codon, gca. 5' to 3' listing.

<400> 5  
 cgccgaacat ccacgagcag gtctccgtgt gg  
 32

<210> 6  
 <211> 35  
 <212> DNA  
 <213> Thermus aquaticus

<220>  
 <221> Mutation  
 <222> (15)..(17)  
 <223> Mutant Taq Pol 1: site 647 phe to cys codon mutation: ttc ->  
 tgc.  
 5' to 3' listing

<400> 6  
 ccgccagctg gatgtgcggc gtcccccgagg aggcc  
 35

<210> 7  
 <211> 35  
 <212> DNA  
 <213> Thermus aquaticus

<220>  
 <221> Mutation  
 <222> (19)..(21)  
 <223> Taq Pol I Compliment Strand: Site 647 phe to cys mutation: g  
 aa ->  
 gca. 5' to 3' listing.

<400> 7  
 ggccctcccgg gggacgccgc acatccacgt ggcgg  
 35

<210> 8  
 <211> 37  
 <212> DNA  
 <213> Thermus aquaticus

<220>  
 <221> Mutation  
 <222> (19)..(21)  
 <223> Taq Pol I Mutation: Site 649 val to cys: gtc -> tgc. 5' to 3'  
 ' lis  
 ting.

<400> 8  
 gccagctgga tgttcggctg ccccgaggag gccgtgg  
 37

<210> 9  
 <211> 37  
 <212> DNA  
 <213> Thermus aquaticus

<220>  
 <221> Mutation  
 <222> (17)..(19)  
 <223> Taq Pol I Mutation complimentary strand: Site 649 val to cys  
 : gac  
 -> gca. 5' to 3' listing.

<400> 9  
 ccacggcctc ccgggggcag ccgaacatcc agctggc  
 37

<210> 10  
 <211> 36  
 <212> DNA  
 <213> Thermus aquaticus

<220>  
 <221> Mutation  
 <222> (13)..(15)  
 <223> Taq Pol I Mutation: Site 652 glu to cys: Codon 652 gtc -> tg  
 c. 5  
 ' to 3' listing.

<400> 10  
ggcgtcccc ggtgcgccgt ggaccccctg atgcgc  
36

<210> 11  
<211> 36  
<212> DNA  
<213> Thermus aquaticus

<220>  
<221> Mutation  
<222> (22)..(24)  
<223> Taq Pol I Mutation Complimentary Strand: AA Site 652 glu to  
cys:  
ant sense codon: ctc -> gca. 5' to 3' listing.

<400> 11  
gcgcatcagg ggggtccacgg cgcaccgggg gacgcc  
36

<210> 12  
<211> 36  
<212> DNA  
<213> Thermus aquaticus

<220>  
<221> Mutation  
<222> (16)..(18)  
<223> Taq Pol I Mutation: AA Site 653 ala to cys: codon: gcc -> tg  
c. 5  
' to 3' listing.

<400> 12  
ggcgtcccc gggagtgcgt ggaccccctg atgcgc  
36

<210> 13  
<211> 36  
<212> DNA  
<213> Thermus aquaticus

<220>

<221> Mutation  
 <222> (19)..(21)  
 <223> Taq Pol I Mutation Complimentary Strand: AA Site 653 ala to  
 cys:  
 antisense codon: ggc -> gca. 5' to 3' listing.

<400> 13  
 gcgcatcagg ggggtccacgc actcccgggg gacgcc  
 36

<210> 14  
 <211> 33  
 <212> DNA  
 <213> Thermus aquaticus

<220>  
 <221> Mutation  
 <222> (16)..(18)  
 <223> Taq Pol I Mutation: AA 654 val to cys: codon: gtg -> tgt. 5  
 ' to  
 3' listing.

<400> 14  
 gtcccccgagg aggcctgtga cccctgatg cgc  
 33

<210> 15  
 <211> 33  
 <212> DNA  
 <213> Thermus aquaticus

<220>  
 <221> Mutation  
 <222> (16)..(18)  
 <223> Taq Pol I Mutation Complimentary Strand: AA Site 654 val to  
 cys:  
 antisense codon: cac -> aca. 5' to 3' listing.

<400> 15  
 gcgcatcagg gggtcacagg cctcccgggg gac  
 33

<210> 16  
 <211> 33  
 <212> DNA  
 <213> Thermus aquaticus

<220>  
 <221> Mutation  
 <222> (16)..(18)  
 <223> Taq Pol I Mutation: AA 655 asp to cys: codon: gac -> tgc

<400> 16  
 ccccgaggagg ccgtgtgccc cctgatgcgc cgg  
 33

<210> 17  
 <211> 33  
 <212> DNA  
 <213> Thermus aquaticus

<220>  
 <221> Mutation  
 <222> (16)..(18)  
 <223> Taq Pol I Mutation Complimentary Strand: AA Site 655 asp to  
 cys:  
 antisense codon: gtc -> gca. 5' to 3' listing.

<400> 17  
 ccggcgcatc agggggcaca cggcctcccg ggg  
 33

<210> 18  
 <211> 33  
 <212> DNA  
 <213> Thermus aquaticus

<220>  
 <221> Mutation  
 <222> (16)..(18)  
 <223> Taq Pol I Mutation: AA 656 pro to cys: codon: ccc -> tgc. 5'  
 to 3  
 ' listing.

<400> 18

cgggaggccg tggactgcct gatgcgccg gcg  
33

<210> 19  
<211> 33  
<212> DNA  
<213> *Thermus aquaticus*

<220>  
<221> Mutation  
<222> (16)..(18)  
<223> Taq Pol I Mutation Complimentary Strand: AA Site 656 pro to  
cys:  
    antisense codon: ggg -> gca. 5' to 3' listing.

<400> 19  
cgcccggcgc atcaggcagt ccacggcctc ccg  
33

<210> 20  
<211> 30  
<212> DNA  
<213> *Thermus aquaticus*

<220>  
<221> Mutation  
<222> (13)..(15)  
<223> Taq Pol I Mutation: AA 657 leu to cys: codon: ctg -> tgc. 5'  
to 3  
    ' listing.

<400> 20  
gccgtggacc cctgcatgcg ccgggcggcc  
30

<210> 21  
<211> 30  
<212> DNA  
<213> *Thermus aquaticus*

<220>  
<221> Mutation  
<222> (16)..(18)



<223> Taq Pol I Mutation Complimentary Strand: AA Site 657 leu to  
cys:  
    antisense codon: cag -> gca. 5' to 3' listing.

<400> 21  
ggccgcccgg cgcatgcagg ggtccacggc  
    30

<210> 22  
<211> 30  
<212> DNA  
<213> Thermus aquaticus

<220>  
<221> Mutation  
<222> (16)..(18)  
<223> Taq Pol I Mutation: AA 658 met to cys: codon: atg -> tgt. 5'  
    to 3  
        ' listing.

<400> 22  
gccgtggacc ccctgtgtcg ccgggcggcc  
    30

<210> 23  
<211> 30  
<212> DNA  
<213> Thermus aquaticus

<220>  
<221> Mutation  
<222> (13)..(15)  
<223> Taq Pol I Mutation Complimentary Strand: AA Site 658 met to  
cys:  
    antisense codon: cat -> gca. 5' to 3' listing.

<400> 23  
ggccgcccgg cgacacaggg ggtccacggc  
    30

<210> 24  
<211> 36

<212> DNA  
<213> Thermus aquaticus  
  
<220>  
<221> Mutation  
<222> (19)..(21)  
<223> Taq Pol I Mutation: AA 659 arg to cys: codon: cgc -> tgc. 5'  
to 3  
' lising.

<400> 24  
gccgtggacc ccctgatgtg ccgggaggcc aagacc  
36

<210> 25  
<211> 36  
<212> DNA  
<213> Thermus aquaticus  
  
<220>  
<221> Mutation  
<222> (16)..(18)  
<223> Taq Pol I Mutation Complimentary Strand: AA Site 659 arg to  
cys:  
antisense codon: gcg -> gca. 5' to 3' listing.

<400> 25  
ggtcttggcc gcccggcaca tcagggggtc cacggc  
36

<210> 26  
<211> 33  
<212> DNA  
<213> Thermus aquaticus  
  
<220>  
<221> Mutation  
<222> (16)..(18)  
<223> Taq Pol I Mutation: AA 660 arg to cys: codon: cgg -> tgc. 5'  
to 3  
' lising.

<400> 26

gacccccctga tgcgctgcgc ggccaagacc atc  
33

<210> 27  
<211> 33  
<212> DNA  
<213> Thermus aquaticus

<220>  
<221> Mutation  
<222> (16)..(18)  
<223> Taq Pol I Mutation Complimentary Strand: AA Site 660 arg to  
cys:  
    antisense codon: ccg -> gca. 5' to 3' listing.

<400> 27  
gatgggtcttg gccgcgcagc gcatcagggg gtc  
33

<210> 28  
<211> 33  
<212> DNA  
<213> Thermus aquaticus

<220>  
<221> Mutation  
<222> (16)..(18)  
<223> Taq Pol I Mutation: AA 661 ala to cys: codon: gcg -> tgc. 5'  
to 3  
    ' lising.

<400> 28  
cccctgatgc gccggtgcgc caagaccatc aac  
33

<210> 29  
<211> 33  
<212> DNA  
<213> Thermus aquaticus

<220>  
<221> Mutation  
<222> (16)..(18)

<223> Taq Pol I Mutation Complimentary Strand: AA Site 661 ala to  
cys:  
antisense codon: cgc -> gca. 5' to 3' listing.

<400> 29  
gttgatggtc ttggcgcacc ggcgcatcag ggg  
33

<210> 30  
<211> 19  
<212> PRT  
<213> Thermus aquaticus

<220>  
<221> Variant  
<222> (1)..(1)  
<223> Taq Pol I Variant: AA Site 643 ala to cys replacement.

<400> 30

Cys	Ser	Trp	Met	Phe	Gly	Val	Pro	Arg	Glu	Ala	Val	Asp	Pro	Leu	Met
1				5					10					15	

Arg Arg Ala

<210> 31  
<211> 19  
<212> PRT  
<213> Thermus aquaticus

<220>  
<221> Variant  
<222> (5)..(5)  
<223> Taq Pol I Variant: AA Site 647 phe to cys replacement.

<400> 31

Ala	Ser	Trp	Met	Cys	Gly	Val	Pro	Arg	Glu	Ala	Val	Asp	Pro	Leu	Met
1				5					10					15	

Arg Arg Ala

<210> 32  
 <211> 19  
 <212> PRT  
 <213> Thermus aquaticus

<220>  
 <221> Variant  
 <222> (7)..(7)  
 <223> Taq Pol I Variant: AA Site 649 val to cys replacement.

&lt;400&gt; 32

Ala	Ser	Trp	Met	Phe	Gly	Cys	Pro	Arg	Glu	Ala	Val	Asp	Pro	Leu	Met
1				5					10					15	

Arg Arg Ala

<210> 33  
 <211> 19  
 <212> PRT  
 <213> Thermus aquaticus

<220>  
 <221> Variant  
 <222> (10)..(10)  
 <223> Taq Pol I Variant: AA Site 652 glu to cys replacement.

&lt;400&gt; 33

Ala	Ser	Trp	Met	Phe	Gly	Val	Pro	Arg	Cys	Ala	Val	Asp	Pro	Leu	Met
1				5					10					15	

Arg Arg Ala

<210> 34  
 <211> 19

<212> PRT  
 <213> Thermus aquaticus  
 <220>  
 <221> Variant  
 <222> (11)..(11)  
 <223> Taq Pol I Variant: AA Site 653 ala to cys replacement.

<400> 34

Ala	Ser	Trp	Met	Phe	Gly	Val	Pro	Arg	Glu	Cys	Val	Asp	Pro	Leu	Met
1				5					10					15	

Arg Arg Ala

<210> 35  
 <211> 19  
 <212> PRT  
 <213> Thermus aquaticus  
 <220>  
 <221> Variant  
 <222> (12)..(12)  
 <223> Taq Pol I Variant: AA Site 654 val to cys replacement.

<400> 35

Ala	Ser	Trp	Met	Phe	Gly	Val	Pro	Arg	Glu	Ala	Cys	Asp	Pro	Leu	Met
1				5					10					15	

Arg Arg Ala

<210> 36  
 <211> 19  
 <212> PRT  
 <213> Thermus aquaticus  
 <220>  
 <221> Variant  
 <222> (13)..(13)

<223> Taq Pol I Variant: AA Site 655 asp to cys replacement.

<400> 36

Ala	Ser	Trp	Met	Phe	Gly	Val	Pro	Arg	Glu	Ala	Val	Cys	Pro	Leu	Met
1				5					10					15	

Arg Arg Ala

<210> 37

<211> 19

<212> PRT

<213> Thermus aquaticus

<220>

<221> Variant

<222> (14)..(14)

<223> Taq Pol I Variant: AA Site 656 pro to cys replacement.

<400> 37

Ala	Ser	Trp	Met	Phe	Gly	Val	Pro	Arg	Glu	Ala	Val	Asp	Cys	Leu	Met
1				5					10					15	

Arg Arg Ala

<210> 38

<211> 19

<212> PRT

<213> Thermus aquaticus

<220>

<221> Variant

<222> (15)..(15)

<223> Taq Pol I Variant: AA Site 657 leu to cys replacement.

<400> 38

Ala	Ser	Trp	Met	Phe	Gly	Val	Pro	Arg	Glu	Ala	Val	Asp	Pro	Cys	Met
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

1 5 10 15

Arg Arg Ala

<210> 39  
 <211> 19  
 <212> PRT  
 <213> Thermus aquaticus  
 <220>  
 <221> Variant  
 <222> (16)..(16)  
 <223> Taq Pol I Variant: AA Site 658 met to cys replacement.

<400> 39

Ala	Ser	Trp	Met	Phe	Gly	Val	Pro	Arg	Glu	Ala	Val	Asp	Pro	Leu	Cys
1				5					10					15	

Arg Arg Ala

<210> 40  
 <211> 19  
 <212> PRT  
 <213> Thermus aquaticus  
 <220>  
 <221> Variant  
 <222> (17)..(17)  
 <223> Taq Pol I Variant: AA Site 659 arg to cys replacement.

<400> 40

Ala	Ser	Trp	Met	Phe	Gly	Val	Pro	Arg	Glu	Ala	Val	Asp	Pro	Leu	Met
1				5					10					15	

Cys Arg Ala



<210> 41  
 <211> 19  
 <212> PRT  
 <213> Thermus aquaticus

<220>  
 <221> Variant  
 <222> (18)..(18)  
 <223> Taq Pol I Variant: Site 660 arg to cys replacement.

<400> 41

Ala	Ser	Trp	Met	Phe	Gly	Val	Pro	Arg	Glu	Ala	Val	Asp	Pro	Leu	Met
1				5					10					15	

Arg Cys Ala

<210> 42  
 <211> 19  
 <212> PRT  
 <213> Thermus aquaticus

<220>  
 <221> Variant  
 <222> (19)..(19)  
 <223> Taq Pol I Variant: Site 661 ala to cys replacement.

<400> 42

Ala	Ser	Trp	Met	Phe	Gly	Val	Pro	Arg	Glu	Ala	Val	Asp	Pro	Leu	Met
1				5					10					15	

Arg Arg Cys

<210> 43  
 <211> 6  
 <212> PRT  
 <213> Thermus aquaticus

<220>  
<221> Variant  
<222> (1)..(1)  
<223> Taq Pol I Variant: Site 513 ser to cys replacement.

<400> 43

Cys Thr Ser Ala Ala Val  
1 5

<210> 44  
<211> 6  
<212> PRT  
<213> Thermus aquaticus

<220>  
<221> Variant  
<222> (2)..(2)  
<223> Taq Pol I Variant: Site 514 thr to cys replacement.

<400> 44

Ser Cys Ser Ala Ala Val  
1 5

<210> 45  
<211> 6  
<212> PRT  
<213> Thermus aquaticus

<220>  
<221> Variant  
<222> (3)..(3)  
<223> Taq Pol I Variant: Site 515 ser to cys replacement.

<400> 45

Ser Thr Cys Ala Ala Val  
1 5

<210> 46  
<211> 6

<212> PRT  
<213> Thermus aquaticus  
  
<220>  
<221> Variant  
<222> (4)..(4)  
<223> Taq Pol I Variant: Site 516 ala to cys replacement.

<400> 46

Ser Thr Ser Cys Ala Val  
1 5

<210> 47  
<211> 6  
<212> PRT  
<213> Thermus aquaticus

<220>  
<221> Variant  
<222> (5)..(5)  
<223> Taq Pol I Variant: Site 517 ala to cys replacement.

<400> 47

Ser Thr Ser Ala Cys Val  
1 5

<210> 48  
<211> 6  
<212> PRT  
<213> Thermus aquaticus

<220>  
<221> Variant  
<222> (6)..(6)  
<223> Taq Pol I Variant: Site 518 val to cys replacement.

<400> 48

Ser Thr Ser Ala Ala Cys  
1 5

